

Silicon Valley Chemist

Silicon Valley Section

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NOVEMBER 2019 NEWSLETTER TOPICS

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Delivering Innovative Medicines:
Small Changes Can Have a Large
Effect
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Connect with Chemists

An early morning chat with fellow chemists

Thursday, November 21, 2019, at 7-8 am

Coupa Café, 538 Ramona Street, Palo Alto

Contact Ean Warren (ewarren@scvacs.org)

for more information or ask for ACS at Coupa.

Chair's Message

Grace Baysinger

Greetings! I hope that this note finds you in good health and spirits. Elections are underway for the ACS Silicon Valley Section. Please participate and help select who you want to help lead SV during this coming year. Many thanks to Madalyn Radlauer for Chairing the Nominations

Committee and to George Lechner for all his help to make the ballot available for voting.

We also need your support by NOT opting out of paying local section dues when



you renew your ACS membership. These funds play a vital role in providing programs and supporting outreach events in our communities.

Events: On November 14, 2019, Wendy Young, Senior VP of Small Molecule Drug Discovery at Genentech will be the speaker for a dinner meeting being held at the Stanford Faculty Club from 6-9pm. The title of her talk is *Delivering Innovative Medicines:*

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SVACS Dinner Lecture

Delivering Innovative Medicines: Small Changes Can Have a Large Effect

Dr. Wendy Young



Abstract

Creative medicinal chemistry design coupled with smart organic chemical syntheses and methodologies lead us to successful drug candidates. This seminar will provide several vignettes from Genentech's small molecule drug discovery with snapshots of where small changes in structure had profound effects on the compound's profile. Highlights of medicinal chemistry, drug metabolism, drug delivery challenges, and our solutions will be shared.

Biography

Wendy Young is senior vice president of small molecule drug discovery at Genentech. She oversees an organization of 400 scientists in chemistry, drug metabolism, pharmaceuticals and biochemical pharmacology. Wendy is a chemist by training and has spent the last 25 years engrossed in the discovery of inhibitors of a variety of

protein classes to treat cancer, cardiovascular and immunology indications and under her leadership numerous drug candidates have progressed into clinical trials. She was the project team leader and co-inventor of fenebrutinib, a BTK inhibitor, which is currently in Phase II

clinical studies in RA, lupus, and urticaria. In 2018, she was awarded the "Genentech Inventor's Award" for this work. She has authored over 70 research papers and published patent applications.

Wendy received a B.A./M.S. degree in 1989 from Wake Forest University having studied in the labs of Huw M.L. Davies. She then received a Ph.D. in 1993 from

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SVACS November Dinner Lecture

Date: Thursday, November 14, 2019

Time: 6:00 - 9:00 PM

Speaker: Dr. Wendy Young, Senior Vice President of Small Molecule Drug Discovery at Genentech

*Delivering Innovative Medicines:
Small Changes Can Have
a Large Effect*

Location: Stanford Faculty Club
Gold Room

Cost: Regular \$50, Students \$25

Registration online:

<https://www.brownpapertickets.com/event/4354906>

Innovative Medicines, continued from front page

Princeton University, under the guidance of Edward C. Taylor. At Princeton, and in collaboration with Eli Lilly, Wendy worked on folate analogs as antitumor agents and Alimta® was an outcome of this collaboration. Thereafter, as an American Cancer Society fellow, she performed post-doctoral studies in the laboratories of Samuel Danishefsky at Sloan-Kettering Cancer Center and was part of the team that completed the total synthesis of Taxol®.

Wendy is a strong advocate for students and women in STEM careers, and has initiated several programs to support these important under-represented groups. In 2015, Wendy was recognized by the San Francisco Business Times as one of San Francisco's "Most Influential Business Women of 2015." Wendy has been a long-time supporter of the American Chemical Society having served many roles on the executive MEDI division and in 2017 was the elected National Chair. In 2018, Wendy was awarded an "ACS Fellows Award" for her lifelong service to chemistry, society, and medicine and in 2019 the ACS National "Earle B. Barnes Award for Leadership in Chemical Research Management" for scientific creativity and dedication to programs and people.

Chemistry Quiz

Catechols (1,2-dihydroxybenzenes) exhibit toxicity against cells ranging from microbes to mammalian cells. What are the molecular mechanisms responsible for this toxicity?

The answer will appear in next month's newsletter.

Last Month's Chemistry Quiz

What is the melting point of tungsten?

Tungsten melts at 3422 °C.

Chair's Message, continued from front page

Small Changes Can Have a Large Effect.

Advanced registration is required and will close a week before the event so book your reservation asap.

I would like to thank Abby Kennedy and Liz Migicovsky for leading a successful National Chemistry Event in October. Natalie McClure has worked tirelessly in a number of outreach events, including the *Bay Area Science Festival*. Matt Greaney, Chair-Elect and Chair of the Program Committee, has spearheaded efforts to hold the first *Bay Area Chemistry Symposium*.

New and noteworthy: *ACS Chemical Health and Safety* will launch January 2020. Manuscripts are being accepted now. It is replacing the Journal of Chemical Health and Safety. In celebration of the 2019 Nobel Prize winners in Medicine and Chemistry, CAS' blog article "*Impact of this year's Nobel-honored research cannot be overstated*" looks at the impact cells sensing and adapting to changes in oxygen has fueled drug discovery efforts and the development of lithium-ion batteries has been a huge catalyst for consumer electronics. Produced by Compound Interest, the infographics for the *Nobel Prizes*

and *IYPT2019 Elements* are worth checking out.

ToxNet: As the ToxNet collection of databases are used by so many people, I wanted to share this news with you. On December 16, 2019, National Library of Medicine (NLM) *TOXNET* information will be migrated to PubChem, PubMed, and Bookshelf. Please see the *TOXNET Transition page* for more information. Several databases, including the Household Products Database and Haz-Map will be retired.

Please contact us: Let us know how we are doing or if you would like to become more involved in the ACS Silicon Valley Section activities. A volunteer organization, we have jobs that are large and small. Please fill out this *contact us form* or send me an email message. Stay connected - like us on *Facebook* and follow us on *Twitter*.

Many thanks for being a member of ACS!

Grace Baysinger
ACS Fellow

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Welcome to the Silicon Valley Section of ACS

Each month, the section receives a spreadsheet from national ACS with the names of members new to our section. The members are either new to ACS, have transferred in from other areas, or are the newest members -- students. To welcome you to the section and get to know you, the Executive Committee offers new members a free dinner! To encourage you to attend a monthly section seminar meeting, we would like you to be our guest. When you register, make certain to mention that you are a new member and you and a friend will be our guests. The seminar meetings are held at a number of local venues. If you are unable to attend in the evening, perhaps you would join us for an outreach event, like judging a science fair, proctoring the Chemistry Olympiad or participating in a National Chemistry Week event in October. Then, there is our annual wine tasting and awards picnic in July. The local section is a volunteer organization. Please attend an event, volunteer to help and get to know your local fellow chemists. Welcome!

New SVACS Members

Tanjit Athwal	Jenna Marie Franke	Ciara Mary Ordner
Roshan Ganesh Bhaskar	Marlene M Gutierrez	Kathleen Palma
Berenger Biannic	Matthew Klope	Elaine Qian
Katrien Brak	Isai A Lopez	J. Michael Sieffert
Shutang Chen	Jessica Lum	Alexis Simpson
Lieza Danan	Mika Maenaga	Aravinda Wijesinghe
Matthew Paul Epplin	Yuezhi Mao	Abdullah Zafar
Nicholas Esker	Brandi Mason	

Save the Date! 2019 Harry and Carol Mosher Award

The recipient of the 2019 Harry and Carol Mosher Award is Dr. Chad Mirkin, George B. Rathmann Professor of Chemistry, Northwestern University. Dr. Mirkin will be presented his award at a Silicon Valley meeting on January 23.

Dr. Mirkin has pioneered the use of nanoparticle-biomolecule conjugates as syntheses in materials science and the development of many nanoparticle-based extra- and intracellular biodiagnostic and therapeutic tools. His research focused on the unique properties of spherical nucleic acids (SNAs), spherical arrangements of nucleic acids with

or without organic or inorganic nanoparticle cores, to enable the synthesis of novel materials and colloidal crystals, the development of high sensitivity probes for chemical and medical diagnostic purposes, and single-entity structures capable of intracellular gene regulation. SNAs are the cornerstone of widely used diagnostic devices, which enable automated, rapid and accurate detection of infectious pathogens and drug resistance markers, without relying on time-consuming culture methods.

In addition, National Geographic identified his invention of Dip-pen lithography (DPN) as one of the top

100 scientific discoveries that changed the world). DPN enables direct deposition of nanoscale materials onto a substrate. Applications of this technology currently range through chemistry, materials science, and the life sciences, and include such work as ultra high density biological nano-arrays, and additive photomask repair.

In addition to his academic and research

work, Dr. Mirkin has been involved in shaping science policy decisions. From 2009 to 2017, Dr. Mirkin was appointed to President Barack Obama's President's Council of Advisors on Science and Technology (PCAST).

Mark your calendars to save the date for this interesting dinner meeting. More details will be published in future newsletters.

2019 Election of Officers and Councilors is Here!

It's that time again — annual elections for SVACS Executive Committee members. We are voting for several positions this year, including:

- Chair Elect
- Secretary
- Treasurer
- Councilor
- Alternate Councilor

We'd like to remind all SVACS members that our elections will be held from October 25 to November 15 and that the entire process is facilitated by the company VoteNow. Members will receive an email from VoteNow with instructions for accessing their ballots. Biographies and candidate statements will be made available through VoteNow. All candidates' information can also be accessed [here](#). We depend on the participation of our members, so please help by voting!

2019 NOBEL PRIZE IN CHEMISTRY

The Nobel Prize in Chemistry 2019 was awarded jointly to John B. Goodenough, M. Stanley Whittingham and Akira Yoshino for the development of lithium-ion batteries.

CHARGE
Lithium-ion batteries power many of our electronic devices. When lithium-ion batteries charge, lithium ions and electrons move from the positive electrode to the negative electrode. When the battery is discharging, the opposite happens and the flow of electrons powers the device.

DISCHARGE

2 VOLTS
TITANIUM DISULFIDE LITHIUM METAL
In the 1970s, Whittingham created the first functional lithium battery with a titanium disulfide cathode and lithium metal anode. The lithium metal made it explosive and unsafe.

4 VOLTS
COBALT OXIDE LITHIUM METAL
In the 1980s, Goodenough used a cobalt oxide cathode instead of a metal sulfide. This doubled the battery's voltage, but it still contained lithium metal in the anode.

4 VOLTS
COBALT OXIDE PETROLEUM COKE
Yoshino replaced the lithium metal anode with petroleum coke, a carbon-based by-product from the oil industry. This led to commercial lithium-ion batteries in 1991.

WHY DOES THIS RESEARCH MATTER?
Many of the devices we use are powered and made possible by lithium-ion batteries. They are also commonly used in environmentally friendly electric cars. Improvements to these batteries continue to be made.

Nobel Prize in Chemistry press release: <https://www.nobelprize.org/uploads/2019/10/press-chemistry-2019-2.pdf>

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2019 NOBEL PRIZE IN PHYSIOLOGY/MEDICINE

The Nobel Prize in Physiology or Medicine 2019 was awarded to William G. Kaelin Jr., Sir Peter J. Ratcliffe and Gregg L. Semenza for their work on how cells sense and adapt to oxygen availability.

FUNCTIONS
METABOLISM
BLOOD VESSELS
RED BLOOD CELLS

DISEASES
IMMUNE SYSTEM
CANCER
ANAEMIA

Oxygen sensing plays important roles in our bodies' cells. It allows adaptation of their metabolisms and production of red blood cells and new blood vessels. It is also important for our immune system, and plays roles in diseases such as anaemia and cancer.

WHY DOES THIS RESEARCH MATTER?
This research helps us understand how oxygen levels affect cell reactions. Drugs that can activate or block these oxygen-sensing mechanisms may be of use in treating cancer and other diseases.

Nobel Prize in Physiology or Medicine Press release: <https://www.nobelprize.org/uploads/2019/10/press-medicine2019.pdf>

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CHEMPLOYMENT ABSTRACTS

CHEMPLOYMENT ABSTRACT 4007

Position Title: Assistant Professor of Chemistry

Job Description: Develop and teach lower division courses in chemistry and upper division courses in your area of expertise; Create an externally-funded research program that provides opportunities for undergraduates; provide service to the department, university and community.

QUALIFICATIONS DESIRED:

Education: Ph.D. in chemistry, biochemistry, or a closely related field

Experience: Demonstrated experience with course and curriculum development; Proven ability and desire to mentor and teach students from diverse cultural, ethnic, educational, and economic backgrounds; A record of scholarly achievement including publications, grantsmanship, and external funding; and evidence of collaboration and leadership.

LOCATION, SALARY, EMPLOYER:

Job Location: Seaside, CA

Salary: Competitive salary and benefits package; on-campus employee housing

Description: California State University, Monterey Bay is a comprehensive, mid-sized four-year university whose staff and faculty help transform student lives by emphasizing project-based learning, requiring service learning, and promoting multicultural and global perspectives on and beyond the campus community.

Application Instructions: For detailed instructions, visit <https://csumb.peopleadmin.com/postings/5463>

Applications will be accepted until the position is filled, and review of applications will begin November 17, 2019.



SILICON VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
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To receive an email when our newsletter
is published on our web site, sign up at:

<https://svacs.org>

SILICON VALLEY SECTION

2019 Section Officers

Chair	Grace Baysinger	650-725-1039	graceb@stanford.edu
Chair-Elect	Matt Greaney	510-410-0195	greaney19@gmail.com
Past Chair	Melody Esfandiari	408-924-4973	melody.esfandiari@sjsu.edu
Secretary	Jigisha Shah	315-289-5115	jssheth@syr.edu
Treasurer	Ihab Darwish	650-624-1389	darwishis@yahoo.com

Councilors

2017-2019	George Lechner	408-226-7262	glechner@aol.com
2017-2019	Matt Greaney	510-410-0195	greaney19@gmail.com
2018-2020	Ean Warren	650-714-5133	ewarren@scvacs.org
2018-2020	Natalie McClure	650-906-7831	nmclure@drugregulatoryaffairs.com
2019-2021	Linda Brunauer	408-554-6947	lbrunauer@scu.edu
2019-2021	Jane Frommer	408-927-2225	jane@collabra.net
2019-2021	Sally Peters	650-447-3027	sallybrownpeters@gmail.com

Alternate Councilors

2017-2019	Elizabeth Migicovsky	408-924-5012	elizabeth.migicovsky@sjsu.edu
2018-2020	Madalyn Radlauer	408-924-5482	madalyn.radlauer@sjsu.edu
2019-2019	Dave Parker	408-605-2116	drdtparker@gmail.com
2019-2019	Todd Eberspacher	650-723-2505	eberspacher@stanford.edu
2019-2021	Laura Yeager	626-826-3145	laura.yeager123@gmail.com
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Newsletter

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ChemPloyment Abstracts

Director:	Liang Cao	liang.cao@aol.com
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FUTURE EVENTS

- Nov 8** Bay Area Chemistry Symposium
Merck Research Laboratories
South San Francisco, CA
For more details and to register: svacs.org/BACS
- Nov 14** SVACS Dinner Lecture
Dr. Wendy Young
Genentech, Senior Vice President
Small Molecule Drug Discovery
Stanford Faculty Club, Stanford, CA
graceb@stanford.edu
- Nov 18** Dr. Dirk Smit, Shell Oil Company
Stanford Precourt Institute for Energy
Nvidia Auditorium, Stanford, CA
<https://energy.stanford.edu/events/energy-seminar-dirk-smit-shell>
- Jan 23, 2020** Dr. Chad Mirkin
SVACS Harry & Carol Mosher awardee
Dept. of Chemistry, Northwestern University
Location to be determined
- Jan, 2020** SVACS Younger Chemists Speed Networking
Santa Clara University
Date to be determined
For more details and to register,
go to the Calendar page at <https://svacs.org>